

COLLEGE OF  
**HEALTH  
SCIENCES**



## MEDICAL LABORATORY SCIENCES DEPARTMENT

### Medical Laboratory Sciences Laboratories

Lab Name	Location	Person in Charge	Courses Served
- Hematology - Clinical Chemistry - Biochemistry	W12-031	Nabila Hussein	- Hematology (I) - Clinical Chemistry I & II - Biochemistry - Phlebotomy - Graduate Students Research Projects
- Biology Lab	W12-035	Maen Al Asad	- Biology - Hematology II - Blood Bank
- Microbiology Lab	W12-141	Said Shahwan	- General Microbiology - Medical Bacteriology - Diagnostic Microbiology - Graduate Students Research projects
- Histology, - Parasitology - Histopathological Techniques Lab	W12-145	Zainab Abdallah Ibrahim	- Histology - Histopathological Techniques - Parasitology - Urinalysis & Body Fluids - Graduate Students Research Projects
- Human Anatomy and Physiology Lab	W12-205	Maen Al Asad	- Human Anatomy & Physiology
- Molecular Genetics & Immunology Lab	W12-227	Shaikha Alnaqbi	- Molecular Genetics - Immunology - Faculty research - Graduate Students Research Projects

### Medical Laboratory Sciences Lab Staff

#	Name	Ext.	Email
1	Maen Omar Asad	065053483	maen@sharjah.ac.ae
2	Nabila Hussein	065053485	nabila@sharjah.ac.ae
3	Said Shahwan	065053486	saidj@sharjah.ac.ae
4	Zeinab Abdallah Ibrahim	065053421	zibrahim@sharjah.ac.ae
5	Shaikha Alnaqbi	065053481	Shaikha.Abdalla@sharjah.ac.ae

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## BIOCHEMISTRY LABORATORY



Location	Lab Staff in Charge	Contacts
W12-031	Nabila Hussein	065053485

### INTRODUCTION

This Laboratory introduces students to basic experiments and techniques used in the biochemistry Laboratory. Initially, emphasis is placed on the buffer concept and preparation. The principle of kinetic analysis of enzymes is covered with experiments to show the effect of pH, temperature, and substrate concentrations on the activities of enzymes. Experiments on carbohydrates, lipids and vitamins are also conducted.

### EQUIPMENT & INSTRUMENTS

- Spectrophotometers
- pH Meters
- Centrifuges
- Electrophoresis Complete System
- Automatic Pipettes
- Analytical Balance
- Water Bath
- Balances
- Glassware and Test Tubes
- Refrigerator

### EXPERIMENTS

- Basic Calculations, Dilution, and Spectrophotometric Concepts, Components, and Utilization (2 Sessions)
- Determination of Unknown Concentration Using Spectrophotometer
- Buffer Preparation and Titration of a Weak Acid with Strong Base
- Effect of PH on the Salivary Amylase Activity
- Effect of the Substrate Concentration Upon the Rate, Velocity, of an Enzymatic Reaction

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- Determination of the Iodine Number of Fat
  - Estimation of Blood Cholesterol
  - Determination of Vitamin C in Various Fruit Drinks
  - Identification & Determination of Carbohydrates (Monosaccharides, Disaccharides & Polysaccharides)

### **TESTS & SERVICES**

- Training students utilizing the machines and equipment in the lab on their Graduation project.
- Participating in activities inside and outside the University performing clinical lab testing at the site.

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## BIOLOGY LABORATORY



Location	Lab Staff in Charge	Contacts
W12-035	Maen Al Asad	065053483

### INTRODUCTION

This Laboratory is designed to introduce the student to the laboratory safety rules, scientific method, microscopy, cell chemistry and basic laboratory studies of structure, function and interactions of living organisms including cells, tissues and organ systems. In addition to the principle of DNA structure, genetics and heredity.

### EQUIPMENT & INSTRUMENTS

- Safety tools
- Compound Light Microscopes
- Stereomicroscope Microscopes
- Prepared Microscope Slides
- Dyes (Iodine, Benedict, Biuret)
- Charts (Body Systems)
- Hematocrit Centrifuges and Readers
- Blood grouping reagents
- Hemocytometers
- Scale for weight and height measurement
- Deep Freezer (-80 Deg. Centigrade)

### EXPERIMENTS

- Introduction to Laboratory Safety, Orientation, Laboratory Basic Instruments and Tools, Metric System, the Scientific Experimental Method, and Temperature Conversion
- Identifying Parts of the Light and Stereo Microscopes, Focusing, Preparing Wet Mounts, and Prepared Slides Observation
- Chemical Composition of Cells
- Human Body Tissues: Classification & Identification of Epithelial, Connective, Muscular, and

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Nervous Tissues

- Systemic Homeostasis
- Hematocrit & Blood Grouping
- Red blood cell count
- White blood cell count
- Mitosis: Stages of Mitosis in Onion Root Tips
- Meiosis: Stages of Oogenesis & Spermatogenesis (Prepared Slides)
- DNA extraction
- Ideal body weight, BMI and BMR calculation

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## BLOOD BANKING LABORATORY



Location	Lab Staff in Charge	Contacts
W12-035	Nabila Hussein	065053485

### INTRODUCTION

This Laboratory introduces students to basic techniques and procedures used in blood banking. Emphasis is placed on quality control and quality assurance to make sure that donor blood is compatible with the recipient blood. Tests include ABO grouping and Rh typing, compatibility and cross matching, antibody screening and antibody identification, and the Coombs Test.

### EQUIPMENT & INSTRUMENTS

- Automated Blood Group System (ID- Centrifuge 24)
- Centrifuges
- Incubator 37°C (ID-Incubator 37 S II)
- Rh View Box
- ABO/D+ Reverse Grouping Cards
- Blood Banking Reagents
- Microscopes
- Refrigerator

### EXPERIMENTS

- Preparation of Normal Saline and 2-5% Cell Suspension Washed RBC Cells
- Preparation of Check Cells
- Test Tube Determination of ABO Grouping, Both Forward and Reverse
- Determination of Rh Typing Including Du
- Performing Crosshatching and Compatibility Testing
- Performing the Antibody Screening Test
- Determining Antibody Titer and Score
- Combs' Test, Both Direct and Indirect
- Determination of Secretor Status

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## **TESTS & SERVICES**

- ABO Grouping
- Rh Typing
- Cross Matching and Compatibility
- Antibody Screening and Antibody Identification
- Antibody Titer and Score
- Comb Tests (Direct & Indirect)
- Preparation of 3% whole blood in saline solution

## CLINICAL CHEMISTRY LABORATORY



Location	Lab Staff in Charge	Contacts
W12-031	Nabila Hussein	065053485

### INTRODUCCION

This Laboratory introduces students to the manual procedures and techniques commonly conducted in the clinical chemistry Laboratory. Clinical significance and interpretation of lab results is highly emphasized. Investigations included in this lab are the liver function tests, kidney function tests, lipid profile, carbohydrate metabolism, electrolytes tests, and endocrine function tests. Experiments cover subjects in both Clinical Chemistry 1 and 2.

### EQUIPMENT & INSTRUMENTS

- Spectrophotometers
- Semi-Automated Chemistry Analyzer
- Centrifuges
- Automatic Pipettes
- Chemical Reagents and Kits
- Complete Electrophoresis System
- Densitometer
- Refrigerator

### EXPERIMENTS

- Determination of Uric Acid and Creatinine in Serum and Urine
- Determination of Fasting Blood Sugar
- Kinetic Measurement of Lipase and or Alpha Amylase
- Kinetic Determination of Creatine Kinase
- Determination of Total Bilirubin, Conjugated and Unconjugated Bilirubin
- Determination of Albumin and Total Protein in Plasma
- Kinetic Determination of Alanine Aminotransferase
- Determination of Total Cholesterol

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- Determination of HDL- Cholesterol and Calculation of HDL- Cholesterol
  - Body water and electrolytes
  - Acid-base disorder and acid-base control
  - Determination of total calcium
  - Colorimetric Determination of Chloride in Serum
  - Determination of Iron and TIBC
  - Determination of Zink

### **TESTS & SERVICES**

- Liver Function Tests (AST, ALT, Bilirubin, etc.)
- Kidney Function Tests (Uric Acid, and Creatinine, Urea)
- Cardiac Enzymes (CPK, AST)
- Iron & TIBC & Blood Sugar
- Albumin, Total Protein and more

## DIAGNOSTIC MICROBIOLOGY LABORATORY



Location	Lab Staff in Charge	Contacts
W12-141	Said Shahwan	065053486

### INTRODUCTION

This Laboratory introduces students to various techniques and procedures used in the isolation and identification of infectious agents of human diseases including pathogenic bacteria, fungi according to body systems. The labs concentrate on the analysis of clinical specimens in cases when infectious diseases are suspected and how to accurately the labs results. General investigations will be carried out for urine, stool and body fluids (i.e., spinal, synovial, pleural, pericardial, abdominal, and seminal fluid)

### EQUIPMENT & INSTRUMENTS

- Incubators
- Autoclaves (fixed and portable)
- Anaerobic Jars
- pH Meters
- Ovens
- Colony Counters
- Balances
- Refrigerators
- Laminar flow
- Water bath
- Compound microscopes
- Distillation

### EXPERIMENTS

- Collection and Proper Preparation of Routine Specimens for Testing
- Preparation, Sterilization, Labeling and Storing Culture Media and Reagents used in Clinical Microbiology Lab

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- Biochemical Testing to Identify Bacteria
  - Examination of Sputum
  - Examination of Fecal and Urine Specimens

**TESTS & SERVICES**

- Isolation and Identification of Infectious Agents of Human Diseases
- General Investigations for Urine, Stool & Body Fluids

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## HEMATOLOGY LABORATORY



Location	Lab Staff in Charge	Contacts
W12-031 W12-035	Nabila Hussein	065053485

### INTRODUCTION

This Laboratory introduces students to the basic techniques used in the evaluation and investigation of blood disorders. Manual and automated procedures are conducted in this Laboratory. Students perform manual and automated CBC, which includes the red blood cell count, white blood cell count, and platelet count. Students are also exposed and trained to identify normal and abnormal disorders related to red cells and white blood cells. The homeostatic part of this course deals with the assessment of the clotting factors and the concept and measurement of PT, PTT, fibrinogen and D-Dimer. Experiments conducted in this Laboratory cover the subjects Hematology 1 and Hematology 2.

### EQUIPMENT & INSTRUMENTS

- Automated Cell Analyzer
- Cell Analyzer CA5309
- 10 terminals Teaching Microscope
- Microscopes
- Hemocytometers
- Hematocrit Centrifuges
- Centrifuges
- Semi-Automated Coagulation Machine
- Refrigerators

### EXPERIMENTS

- Manual White Blood Cell Count
- Manual Red Blood Cell Count
- Manual Determination of Hematocrit and ESR

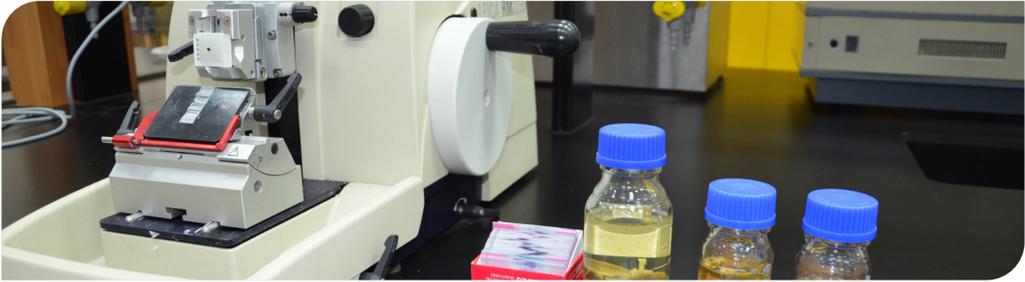
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- Measurement of CBC using Fully Automated Cell Counter
  - Preparing and Staining Peripheral Blood Smears
  - Supra-Vital Staining for Reticulocytes
  - RBC and WBC Morphology, Normal and Abnormal
  - Osmotic Fragility Test and G6PD
  - Sickle Cell Screening
  - Determination of Prothrombin Time
  - Determination of Partial Thromboplastin Time and D-Dimer
  - Bleeding Time

### **TESTS & SERVICES**

- Complete Blood Count (CBC) and Differential Count (Manual and Automated)
- Manual Hematocrit
- Erythrocyte Sedimentation Rate
- Reticulocyte Count, PT, PTT, D-Dimer

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## HISTOPATHOLOGICAL TECHNIQUES LABORATORY



Location	Lab Staff in Charge	Contacts
W12-145	Zainab Abdallah Ibrahim	065053421

### INTRODUCTION

This Laboratory includes a thorough grounding in all aspects of histopathological techniques such as tissue fixation, grossing and preparation, processing, embedding, microtome section cutting, staining and microscopic examination of tissue samples. Other techniques including frozen sections and bone decalcifications are demonstrated.

### EQUIPMENT & INSTRUMENTS

- Automatic Tissue Processor
- Tissue Embedding Station (Histocenter)
- Rotary Microtome
- Section Floating- Out Bath
- Tissue Block Storage Cabinets
- Cryostat
- Binocular Microscopes
- Demonstration Microscope with Large LCD Screen
- Base-Sledge Microtome
- Dissection, Fixation, and Staining Tools
- Automatic Knife Sharpener
- Centrifuges
- Refrigerators
- Freezers

### EXPERIMENTS

- Sample Collection (Rabbit Dissection)
- Fixation, Grossing and Sample Accession
- Manual Tissue Processing

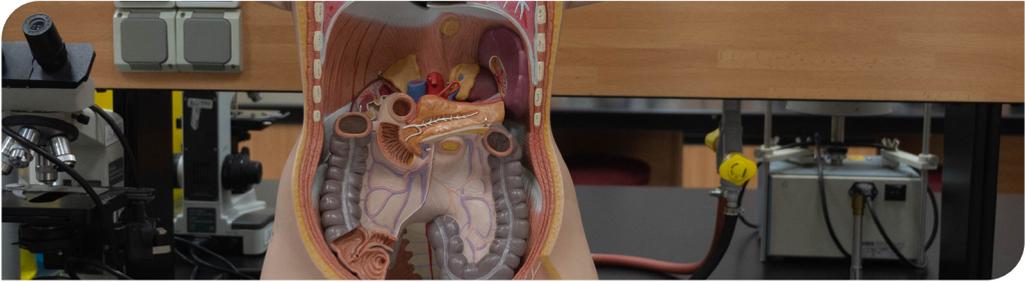
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- Paraffin Embedding and using the Tissue Center/Station
  - Automatic Tissue Processing
  - Microtomy- Introduction to the Instrument
  - Microtomy- Practical Section Cutting
  - Cryostat, Frozen and Related Sections
  - Hematoxylin and Eosin Staining, Mounting and Cover Slipping
  - Bone Decalcification and Processing

### **TESTS & SERVICES**

- Histological Techniques of Fixation
- Grossing, Processing (Dehydration, Clearing, Impregnation)
- Embedding, Section Cutting (Microtomy) and Staining Procedures

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## HUMAN ANATOMY AND PHYSIOLOGY LABORATORY



Location	Lab Staff in Charge	Contacts
W12-205	Maen Al Asad	065053483

### INTRODUCTION

The laboratory course focuses on the fundamentals of human anatomy and physiology with emphasis on the human body systems in addition to teaching basic techniques and clinical measurements in physiology. Students are exposed to the gross anatomy and practicing different techniques of the functions of different systems of the human body, like vision tests, hearing tests, ECG, pulmonary function tests, pulse and blood pressure measurement, urinalysis, and blood sugar test.

### EQUIPMENT & INSTRUMENTS

- Microscopes
- Ice Maker
- Spirometers (Automated and Manual)
- Kymographs
- ECG Machines
- Stethoscopes and Sphygmomanometers
- Stop Watches
- Human Body Models and Charts (Heart, Body Systems, Torso, etc.)
- Exercise Bicycles
- Tuning Forks & Mallets
- Visual Testing Charts
- Snellen Charts
- Ophthalmoscopes
- Flashlights
- Water Bath
- Fume Hoods
- Dissecting Sets

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- Plasticated Models (of Human Organs)
  - Refrigerator
  - Glucometers
  - Digital blood pressure machines
  - Human body skeleton (plastic)

## **EXPERIMENTS**

- Orientation & Lab Safety
- Neuron Anatomy & Physiology
- The Special Senses: The Eye Anatomy & Visual Tests
- Special Senses: Ear Structure and Hearing Tests
- The Cardiovascular System: Heart Anatomy, Blood Pressure & Pulse
- The Cardiovascular System: Cardiac Cycle & Electrocardiograph (ECG)
- Anatomy of the Respiratory System, Respiratory System Physiology – Spirometer
- Functional Anatomy of the Digestive System: Structure & Anatomy and digestive enzymes
- The Urinary System: Anatomy and Urinalysis
- The Endocrine System: Functions, and Blood Glucose Testing

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## IMMUNOLOGY & SEROLOGY LABORATORY



Location	Lab Staff in Charge	Contacts
W12-227	Shaikha Alnaqbi	065053481

### INTRODUCTION

This Laboratory introduces students to the manual, semi-automated and automated procedures and techniques commonly conducted in the Immunology and Serology Laboratory. The course provides the students with solid knowledge on principles of antigen-antibody reactions, and the principles of serological procedures as well as quality control, quality assurance, and lab safety. Many skills and hands-on experience are acquired, including, but not limited to specimen handling, experiment design and equipment setup, in addition to results interpretation and troubleshooting. The laboratory serves two diagnostic purposes: First, it helps in the diagnosis of infectious diseases and second, it assesses the immune status of the patient. Interestingly, this course utilizes test methods for research applications and recently, cell culture facility is part of the lab and a variety of advanced immunological techniques is performed accordingly.

### EQUIPMENT & INSTRUMENTS

- ELISA microplate washer and reader machines
- Inverted fluorescence microscope
- Colony counter
- Centrifuges
- Incubators (both CO<sub>2</sub> and O<sub>2</sub>)
- Water Baths
- Compound Light Microscopes
- Analytical Balance

### EXPERIMENTS

- Dilutions and serial dilutions in different proportions and mechanism of immunological reactions.
- Rheumatoid Factor (RF) latex agglutination test

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- C- Reactive Protein (CRP) latex agglutination test
  - Precipitation Test: Radial Immuno-diffusion (RID) assay
  - In Vitro Phagocytosis
  - Cell viability test (Trypan blue exclusion method): Hemocytometer cell count and Trypan blue cell viability test
  - Enzyme Linked Immunosorbent Assay (ELISA): Qualitative and semiquantitative detection of hepatitis B virus surface antigen (HBsAg) in human serum sample.
  - Western Blotting
  - Flow cytometry

### **ESTS & SERVICES**

- Rapid latex agglutination tests
- Hepatitis B virus ELISA
- Antibody Profile

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## MEDICAL MICROBIOLOGY LABORATORY



Location	Lab Staff in Charge	Contacts
W12-141	Said Shahwan	065053486

### INTRODUCTION

This lab introduces students to the basic techniques in microbiology (i.e., staining, culturing, aseptic transfer, smear preparation). Practical sessions cover methods of isolation and identification of pathogenic bacteria that cause human disease by using rich, selective and differential culture media. Other biochemical and serological methods for diagnosis are also used.

### EQUIPMENT & INSTRUMENTS

- Autoclaves
- Balance
- Anaerobic Jars
- Refrigerators and Freezers
- Culture Media, Diagnostic Kits, and Reagents
- PH Meters, Centrifuges
- Microscopes
- Oven
- Colony Counters
- Water Bath
- Magnetic stirrer
- Laminar flow
- Distillation unit
- Bacterial staining kits

### EXPERIMENTS

- Grow Bacterial Cultures on Appropriate Media and Discuss the Significance of Quality Control in a Microbiology Lab

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- Morphology of Microorganisms: Wet Mount Preparation, Smear Preparation, and Simple Staining
  - Differential Staining: Gram Stain, Acid-Fast Stain and Capsular Stain
  - Staphylococcus, Streptococcus, Enterococcus and Pneumococcus Identification
  - Enterobacteriaceae Identification
  - Pseudomonas and other Aerobic Bacilli Identification
  - Antimicrobial Sensitivity Testing

### **TESTS & SERVICES**

- Isolation and Lab Diagnosis of Pathogenic Bacteria
- Antibiotic Sensitivity and MIC for Bacteria
- Laboratory Diagnosis of Different Types of Bacteria by using Various Bacteriological, Serological and Biochemical Methods to Diagnose Pathogenic Bacteria

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## MOLECULAR GENETICS LABORATORY



Location	Lab Staff in Charge	Contacts
W12-227	Shaikha Alnaqbi	065053481

### INTRODUCTION

Experiments are designed for students to be familiar with calculations, micro pipetting, reagent preparation, biological safety methods, advanced techniques like DNA, RNA Electrophoresis from human blood samples, plasmid DNA isolation, competent cells preparation, PCR amplification etc.

This course provides the students with basic biological lab safety knowledge and advanced micro techniques, and how to handle biological samples, set up molecular biology experiments, basic trouble shooting and interpretation of results.

### EQUIPMENT & INSTRUMENTS

- Autoclave
- Centrifuges
- UV Trans Illuminator
- Balances
- Micropipettes
- Electrophoresis Apparatus
- Water Bath
- Microwave Oven
- Conventional PCR
- Nano drop
- qPCR
- Karyotyping testing
- Cloning and DNA recombinant system
- Inverted fluorescent Microscope

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## EXPERIMENTS

- Calibration
- Preparing Laboratory Solutions
- DNA Extraction from Whole Blood
- DNA Purification & Gel Preparation and Electrophoresis
- Preparation and Transformation of Competent Cells
- Plasmid Isolation
- Use of Restriction Enzymes
- Action of Ligase
- RNA Extraction from Whole Blood
- Polymerase Chain Reaction (PCR and qPCR)
- Karyotyping protocols
- Southern Blot

## TESTS & SERVICES

- Isolation of DNA and RNA from Various Tissues
- Production of cDNA Mutagenesis of Cloned Genes
- Specific Gene Detection using PCR Technique and Cloning

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## PARASITOLOGY LABORATORY



Location	Lab Staff in Charge	Contacts
W12-145	Zainab Abdallah Ibrahim	065053421

### INTRODUCTION

Laboratory sessions are designed to expose students to the morphology of different diagnostic stages of medically important parasites and introduce the skills for proper lab procedures for collection, handling and identification of most common protozoal and worm infections.

### EQUIPMENT & INSTRUMENTS

- Microscopes
- Glassware
- Prepared Parasitology Slides
- Slides and Cover Slips
- Centrifuges
- Charts and Models
- Test Tubes

### EXPERIMENTS

- Collection of Specimens and Types of Potential Sources of Errors in Laboratory Procedures
- Wet mount preparation for fecal samples.
- Microscopic Identification of Flagellated Protozoa: *Trypanosoma Brucei* Rhodesiense, *Trypanosoma Brucei* Gambiense, *Trypanosoma Cruzi*, *Leishmania* Species, *Giardia Lamblia*, *Trichomonas Vaginalis* and Non-Pathogenic *Trichomonads*
- Concentration Techniques for Recovery of Intestinal Parasites. Sarcodina: *Entamoeba Histolytica*, *E. coli*, *E. Hartmanni*, *Iodamoeba Butschlii*, *Endolimax Nana*
- Preparation of Thin and Thick Blood Films. Giemsa Staining Technique for Blood Smears
- Identification of Malaria Parasites in Stained Blood Smears
- Identification of Different Eggs and Larval stages of Medically Important Worms

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## **TESTS & SERVICES**

- Microscopic Fecal Examination for Detection of Eggs and Cysts of Parasites of the Digestive Tract
- Concentration Techniques for Parasites
- Blood Smear to Detect Blood Parasites

## PHLEBOTOMY LABORATORY



Location	Lab Staff in Charge	Contacts
W12-031	Nabila Hussein	065053485

### INTRODUCTION

This Laboratory offers students the necessary theoretical and practical training to perform proper venous and micro capillary blood collection, solve common phlebotomy complications and understand the phlebotomist's role as an effective member of the healthcare team. In addition, safety and infection control measures, quality assurance and total quality improvement, and ethical standards and professional conduct are introduced.

### EQUIPMENT & INSTRUMENTS

- Phlebotomy training arms
- Vacutainer Systems
- Butterfly System
- Glass Slides
- Puncture Proof Containers
- Disposable Gloves
- Phlebotomy carts
- Hematocrit Centrifuges
- Syringe System
- Vein viewer
- Tourniquets
- Biohazard Bags
- Auto-Lancets

### EXPEIMENTS

- Specimen Handling & Labeling
- Performing Blood Drawing using the Venipuncture Method
- Performing Blood Drawing using the Syringe Method
- Performing Blood Drawing using butterfly needles
- Performing Capillary Puncture Techniques

### TESTS & SERVICES

- Drawing blood from the circulatory system of a person

## URINALYSIS LABORATORY



Location	Lab Staff in Charge	Contacts
W12-145	Maen Al Asad	065053483

### INTRODUCTION

This Laboratory exposes and trains students on the most performed body fluids tests including Urine, CSF, Synovial fluid and others. Routine and special tests are emphasized in this laboratory. Students perform complete urinalysis and examine urine sediments and identify all abnormal findings such as crystals, WBC, RBC, bacteria, parasites, and urine casts.

### EQUIPMENT & INSTRUMENTS

- Centrifuges
- Reagent Test Strips
- Confirmatory reagents
- Blank Glass Slides, Disposable Pipettes, and Cover Slips
- Biohazard bags
- Test tubes and urine containers
- Disposable Gloves
- Siemens Multistix 10 SG Urinalysis Machine
- Refractometer

### EXPERIMENTS

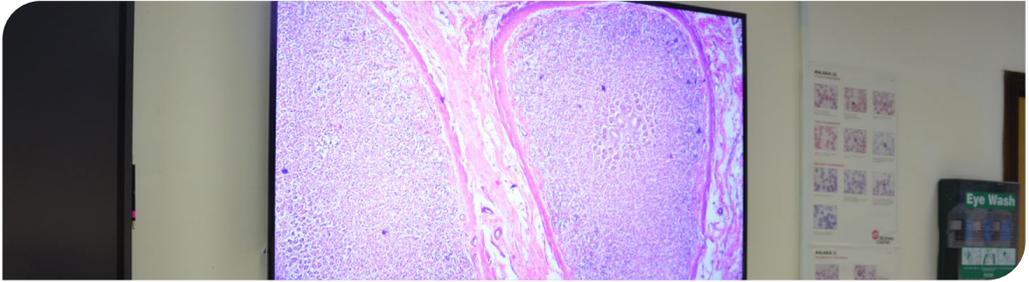
- Physical Examination of Urine: Color, Appearance
- Measurement of Specific Gravity
- Chemical Examination of Urine: pH, Protein, Sugar, Ketone, Bilirubin, Bacteria
- Confirmatory test for bilirubin, proteins, and glucose
- Microscopic Examination of Urine sediment and identification of Blood cells, Crystals, Parasites, Yeast, Bacteria, and Casts
- Screening for Ascorbic Acid
- Screening for Phenylketonuria

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- Screening for Aminoaciduria
  - Investigation of Other Body Fluids: CSF, Synovial Fluid, Peritoneal Fluid

### **TESTS & SERVICES**

- General examination of urine samples and other body fluids.
- Training students to identify all abnormal finding.

## HISTOLOGY LABORATORY



Location	Lab Staff in Charge	Contacts
W12-145	Zainab Abdallah Ibrahim	065053421

### INTRODUCTION

Histology laboratory focuses on the identification of the basic structures of the human (Lab animals) cells, tissues and organs.

### EQUIPMENT AND INSTRUMENTS

- Microscopes
- Microscope connected with smart TV screen

### EXPERIMENTS

Microscopic examination of the main body tissues

- Epithelial tissue
- Connective tissue
- Muscular tissue
- Nervous tissue

Microscopic examination of the body systems organs

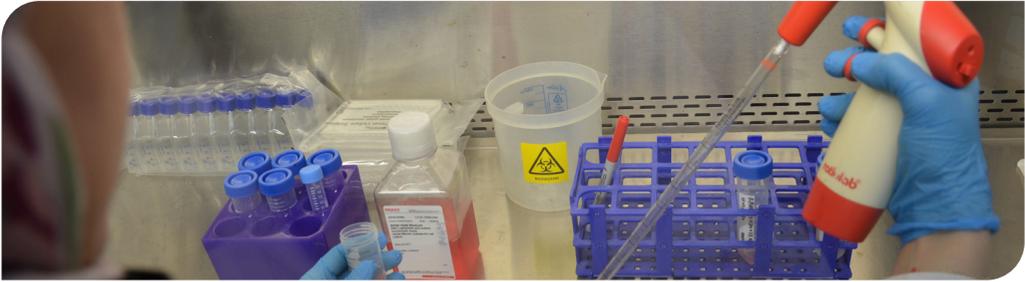
- Cardiovascular and Integumentary system
- Digestive system
- Respiratory system
- Urinary system
- Reproductive system

### TESTS AND SERVICES

Knowledge of the structures of the body tissues and major organ systems.

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## MLS RESEARCH LABORATORY



Location	Lab Staff in Charge	Contacts
W12-227	Shaikha Alnaqbi	065053481

### INTRODUCTION

The objectives of this Laboratory are to conduct research projects for Bachelor and master's degree students and faculty members, achieve scientific outcomes, improve the quality of research, acquire a variety of advanced equipment related to research, attract significant funding for research projects and encourage collaborative scientific research among experts and researchers.

- To expand the horizon of scientific knowledge through extensive and profound research.
- To advance University research, education, and training in the field of Molecular Genetics, Immunology, and tissue culture as well as other different scientific disciplines.
- To promote and enhance the quality and innovative nature of scientific research, where outcomes reflect well on the academic community and lead to more accomplishments.

### EQUIPMENT AND INSTRUMENTS

- Thermal Cyclers for PCR & qPCR
- UV Light Documentation System
- Gel Electrophoresis Station
- ELISA microplate washer and reader machines
- Inverted Immuno-fluorescence microscope
- Tissue culture facility (Fully equipped)
- Cytology and Cytogenetics Facility.
- Trans-Illuminator
- Thermal Shaker
- Fume hoods
- Biosafety Cabinets
- Fridges & Freezers
- Colony counter

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- Centrifuges
  - Incubators (both CO<sub>2</sub> and O<sub>2</sub>)
  - Water Baths
  - Compound Light Microscopes
  - Analytical Balance

### **TESTS AND SERVICES**

- Prepare highly competent medical laboratory scientists to serve their patients.
- Uphold the principles of Ethics and Medical Law in diagnostics and research
- Specific Gene Detection using PCR Technique and Cloning.
- Isolation of DNA and RNA from Various Tissues.
- Enzyme-Linked Immunosorbent Assay (ELISA).
- Preparing a cytogenetic lab for research purposes.
- Preparing a tissue culture lab for research purposes.